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Arizona Zone  
Entomology &  
Pathology

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Date: February 20, 1998

Route To: \*

Subject: Functional Assistance concerning bark beetle risk in silvicultural certification stand

To: Gayle Richardson

On February 10, 1998 Bobbe Fitzgibbon, Entomologist and I met with you to view and discuss potential bark beetle risk associated with your silvicultural certification stand. This letter documents our visit and suggestions.

The stand is a young ponderosa pine stand, with an average diameter around 7 inches and basal area of 114 square feet. Some larger pines are present in the stand but most are less than 12 inches in diameter. Other tree species present include alligator juniper and scattered live oak, generally small in size.

The three main bark beetles found in ponderosa pine on the Mogollon Rim are the western pine beetle, Dendroctonus brevicornis, roundheaded pine beetle, Dendroctonus adjunctus, and pine engraver beetle, Ips pini. However D. adjunctus has largely been observed as a secondary species to date in this area though it is the primary Dendroctonus in southern Arizona. Bobbe looked through our historical aerial survey maps which date back to 1974, and found that the predominant beetle reported in the area was the western pine beetle. There was little mortality located in the immediate vicinity of this stand however in some years considerable mortality occurred in the general area. Due to the small size of the trees in this stand the only beetle that might a concern would be the pine engraver. A description of the pine engraver and some management considerations follows.

Several species of Ips are found in Arizona, the most common one found above the Mogollon Rim in northern Arizona is the pine engraver, Ips pini. Ips species prefer to attack fresh logging slash or other fresh pine debris, however weakened trees may also be attacked. During droughts, apparently healthy trees can be killed, sometimes in great numbers. Top-killing is common in larger diameter trees. The minimum diameter of successful attack is between 2 and 4 inches.

The following site conditions can constitute a risk to Ips population buildup and attacks on standing trees:

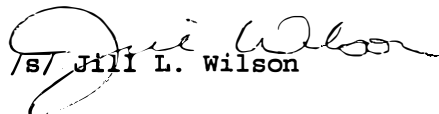
1. Sites stressed by drought, particularly in spring. Low spring moisture, less than 75 percent of normal, has been associated with moderate to heavy tree mortality.
2. Managed sites following precommercial thinning, commercial harvesting, or burning where an abundance of green slash has been created. When slash is abundant and particularly when it has been created during the months of January to June, ideal conditions for Ips-caused mortality can be created.

3. Sites impacted by natural disturbances such as windthrow, and snow and ice damage. These disturbances can create an abundance of suitable Ips habitat.
4. Dense sites. Extensive tree killing often occurs in very dense young sites.
5. Sites infected by dwarf mistletoe. Dwarf mistletoe infection weakens trees and predisposes them to attack by engraver beetles.

Should site conditions fit one or a combination of these categories, a potential hazard exists. The following tactics can be applied to prevent or reduce potential losses to Ips.

1. Maintain or improve stand vigor through precommercial and commercial thinning. A residual basal area of 80 to 100 square feet has been found to provide good site resistance in other regions.
2. When the threat of Ips is a concern, the optimum time to conduct slash-creating activities is July through December. Slash created during this time period may become attacked but doesn't allow for as large a population buildup through the season. Creation of green slash during the months of January through June should be minimized.
3. When it is impractical to cease or minimize slash production during the January through June period, institute a slash treatment program. Above the Rim in Arizona, a lop and scatter treatment in which slash is scattered into openings seems sufficient in most years. Other methods of treating slash include chipping, burning or crushing. These must be accomplished promptly after slash creation as the beetles can invade the slash and the next generation can emerge in as short as a month during mid summer.
4. Avoid scheduling continuous annual management activities in adjacent areas. Where slash is created in adjacent areas for more than 1 year, the risk of Ips buildup exists. This risk can be reduced by separating activities by 2 miles or more.
5. In areas of special concern, slash can be monitored and if a potential problem occurs an entomologist can be contacted to examine other options.

If you have any questions about this letter, or require further assistance feel free to give me a call at (520) 556-2074.

  
/s/ Jill L. Wilson

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